

BASELINE INVENTORIES OF
FISH, REPTILE, MAMMAL, AMPHIBIAN AND AVIAN SPECIES
OF THE KNIFE RIVER INDIAN VILLAGES N.R.S.

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Objectives

The ongoing research has the following objectives.

1. Establish baseline data on vertebrate populations and their ecological distributions.
2. Identify and estimate population sizes for state and federally listed threatened or endangered species and develop management recommendations for them.
3. Identify and estimate population sizes of exotic species.

The study will provide basic management information relative to threatened or endangered species and relative to maintenance of native species in the remnants of native prairie and Missouri River bottom land on the KNRI.

Methods

The fish species present and their distributions and relative abundances were determined from seining and gill netting in eight sections situated over the length of the Knife River within the KNRI. Water quality in these sections was examined by measuring water temperature, turbidity, conductivity, pH and dissolved oxygen. Sampling was done once each month in June, July, August and September, 1986.

Terrestrial vertebrates were sampled on 18-22 April, 5-9 May, 13-22 June and 1-14 September, 1986. Species lists of terrestrial vertebrates are being compiled by observations of animals and sign, searches for vertebrates in appropriate habitats and small mammal trapping. The staff at KNRI and members of the Bismarck-Mandan Bird Club have contributed observations. Crowing/gobbling count survey routes, following Kimball (1949), were made to obtain relative indices of ring-necked pheasants and wild turkeys. A raptor survey route was established and observations made during each visit. A survey was made for sharp-tailed grouse dancing grounds, and a search of the Knife River and Missouri River within the KNRI boundaries was made for inland least tern nests.

In June, 13 variable bird census plots (Reynolds 1980) were established in the major habitats and data collected on relative numbers of breeding birds.

Relative indices of mammal species were made by appropriate methods. Deer numbers are being estimated by spotlight surveys of deer (Compton 1986) and by pellet group counts along belt transects established in the riparian forests (Neff 1968). Small mammals in the major habitats of KNRI were censused by 2,723 trap-nights effort in June and September. Relative numbers of thirteen-lined ground squirrels and pocket gophers were estimated by means of ground squirrel burrow counts and pocket gopher mound counts (Reid, et al 1966) on the Big Hidatsa archeological site.

More visits to KNRI are planned for this winter and spring to improve the reliability of the estimations of population numbers of some of the terrestrial vertebrates.

Results

Twenty three kinds of fishes were captured during this survey. The minnow family contained the greatest number of species collected; its nine species represented 39% of the total kinds taken. Sport fishes present included northern pike, channel catfish, white bass, sauger, walleye and freshwater drum.

Most species were distributed widely over the study area. Sand shiners, fathead minnows, shorthead redhorses, and white suckers were taken from throughout the area while goldeye, flathead chub, emerald shiner, river carpsucker, and channel catfish were taken from sites over nearly all of the area. Carp, western silvery minnow, longnose sucker, sauger and walleye were captured from only 2-4 sections, but their distributions were over more than one half of the length of the study area. Only the rainbow smelt, common shiner, red shiner, stonecat and orangespotted sunfish were considered to have truly restricted distributions in the study area.

Minnows and suckers were the most abundant families and comprised 83 and 16%, respectively, of the total numbers taken. The sand shiner, fathead minnow, river carpsucker, white sucker and shorthead redhorse were considered to be abundant species in the study area. These species together comprised 98% of the total number of specimens seined. The sand shiner was the most numerous species and by itself accounted for 73% of the total number of fish collected.

Goldeye, rainbow smelt, common carp, flathead chub, emerald shiner, longnose sucker, channel catfish and sauger were judged to be only moderately abundant species. These species together only accounted for 2% of the total number of specimens taken.

The western silvery minnow, emerald shiner, common shiner, spottail shiner, red shiner, stonecat, orangespotted sunfish and walleye were only infrequently taken and together comprised less than 1% of the total number of specimens collected. In this group, walleyes were probably more abundant than collections indicated because they were more able to avoid capture than the smaller species.

Nine species (39%) were collected on all four sampling dates indicating they were summer-long residents. Although not collected during all four sampling periods, other species such as common carp, channel catfish, white bass and walleye also were probably in the study area throughout the summer but at times eluded capture. Rainbow smelt, western silvery minnow, common shiner, spottail shiner, red shiner, stonecat and orangespotted sunfish may not have been summer-long residents in the study area.

The measured characteristics of water were largely similar throughout the study area. In surface water temperatures, the major difference noted was the periodic effects of lower temperatures in the lower sections of the river when the Missouri River intruded. No consistent differences in turbidity levels, conductivity, pH and dissolved oxygen levels were noted among sampling sites throughout the study area.

Species of terrestrial vertebrates observed have been those expected to be characteristic of the bottom land forests of the Missouri River and the adjacent terraces. Six species of amphibians, 7 species of reptiles, 102 species of birds and 30 species of mammals have been established to be residents, migrants or transients in the KNRI.

Two dancing grounds of sharp-tailed grouse were identified, one in the southwest corner and the other about 300 m north of the visitor Center. Twelve species of raptors were observed on the KNRI; northern harriers, American kestrels and great horned owls are known or strongly suspected to nest within the boundaries of the historic site. The structurally complex brushy thickets and riparian forests support more species of birds and small mammals than native or disturbed grasslands (Table 1). Not all the species observed in each habitat breed in that habitat, because some of them were utilizing the habitats for foraging or travel routes. The most commonly observed species in the riparian forest were the house wren, common yellowthroat and brown-headed cowbird. Red-eyed vireos, mourning doves, American robins and least flycatchers were common. Ovenbirds and Lazuli buntings were commonly observed in heavy brushy understory and brushy forest edges, respectively. The most commonly observed species in the brushy thickets were the western meadowlark, clay-colored sparrow, mourning dove and brown-headed cowbird. Common yellowthroats, yellow warblers, American goldfinches, gray catbirds and brown thrashers were also frequently observed. The grasshopper sparrow and western meadowlark were the most frequently observed species in the native grassland and disturbed grassland. Bobolinks were often observed in the disturbed grassland, also. Deer mice, white-footed mice and meadow voles are common in most habitats. Deer mice are the most common small mammals, as revealed by trapping, although white-footed mice are numerous in riparian forests where there is sufficient cover. Red-backed voles are common in habitats with heavy grass cover and sufficient moisture.

Individuals of the inland least tern, an endangered species, were observed in June to forage for small fish along the length of the Knife River in the KNRI. No nests were found within the boundaries of KNRI; however nesting pairs of

Table 1. Numbers of species of birds and small mammals recorded within major habitats during the breeding birds survey and trapping survey, respectively.

| Habitat | Number of Species | |
|---------------------|-------------------|---------------|
| | Birds | Small Mammals |
| Riparian Forest | 26 | 7 |
| Brush Thickets | 30 | 9 |
| Disturbed Grassland | 7 | 6 |
| Native Grassland | 16 | 4 |

least terns were located by Dryer and Dryer (1985) on islands just upstream of the KNRI on the Missouri River. A bald eagle was observed along the Missouri River in the KNRI in spring.

Forty one, 45 and 36 white-tailed deer were counted on three nights of the spotlight survey in September, 1986. The following distribution of deer by habitat was observed.

| | | | |
|-----|-------------------|---|-----------------------|
| 69% | of deer sightings | - | alfalfa fields |
| 12% | " " | " | - grain stubble |
| 8% | " " | " | - disturbed grassland |
| 7% | " " | " | - fallow fields |
| 3% | " " | " | - riparian forest |

Counts of deer pellet groups which accumulated during a 128-day period were converted to estimates of 360 groups/hectare and 1,150 groups/hectare in two riparian forest locations.

Counts of ground squirrel burrows and pocket gopher mounds in the Big Hidatsa archeological site suggest greater activity of the burrowing rodents on the mowed portion than the unmowed part. Total counts of ground squirrel burrows in 12 mowed earth lodge depressions were approximately 2.5 times greater than counts in 12 unmowed lodge depressions. Estimates of pocket gopher mounds in the mowed and unmowed areas were 15.1 and 3.7 mounds per hectare, respectively.

There are 5 exotic species of birds, all of which are widely distributed in North America and thus are not local problems for the KNRI. They are the gray partridge, ring-necked pheasant, rock dove, European starling and house sparrow. The heavy agricultural use of the surrounding area probably favors the maintenance of populations of the partridge and pheasant, and the latter three species are tied closely to human habitations and food sources. Two individuals of the house mouse, another introduced species, were trapped on the KNRI. The presence of house mice on the KNRI is probably dependent upon dispersal of individuals from surrounding farm buildings.

Conclusions

The Knife River within the KNRI does not contain any rare, threatened or endangered species of fish. It is not an unaltered plains stream. It contains introduced species of fish and has its habitat altered by the intrusion of cold water from the Missouri River caused by the operation of Garrison Dam.

The KNRI supports the diversity of native species of terrestrial vertebrates that would be expected for riparian bottomlands and the surrounding grasslands. The exotic species of terrestrial vertebrates are those which are now widely distributed and well established in North America. Diversity and abundance of birds and small mammal species are related to habitat moisture and structural complexity.

The Knife River provides foraging habitat for the endangered least tern. Its importance to the maintenance of breeding populations of the least tern on the Missouri River is unknown.

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